

PATENT

Attorney Docket No. 7374/72586

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

STANGEL et al.

Application No.: (Divisional of 09/391,377)

Filed: Herewith

For: A CURING METHOD AND MATERIAL COMPOSITIONS
HAVING DENTAL AND OTHER APPLICATIONS

February 14, 2002

FIRST PRELIMINARY AMENDMENTCommissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please enter this first Preliminary Amendment:

IN THE SPECIFICATION:

Page 1, after the title, insert

Cross-Referenced Applications

A1 This application is a divisional application of U.S. Application 09/391,377, filed September 8, 1999, and this application claims the priority benefit of provisional application 60/099,654, filed September 9, 1998.

Divisional of 09/391,3
STANGEL et al.

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REMARKS

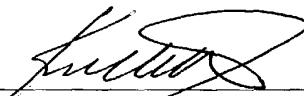
The First Preliminary Amendment incorporates the application lineage per 35 U.S.C. § 120.

The Examiner is specifically directed to the Search Report for PCT/US99/20960, which appears to related to U.S. Patent No. 6, 254,389. A copy of the latter patent is also enclosed.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By:



Kendrew H. Colton
Registration No. 30,368
Telephone No. (202) 419-7000
Facsimile No. (202) 419-7007

FITCH, EVEN, TABIN & FLANNERY
1801 K Street, NW
Suite 401L
Washington, DC 20006-1201
Telephone: (202) 419-7000
Facsimile: (202) 419 -7007



PATENT

Attorney Docket No. 7374/72586

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of:

STANGEL et al.

Application No.: 10/074,051

Filed: May 14, 2002

For: A CURING METHOD AND MATERIAL COMPOSITIONS
HAVING DENTAL AND OTHER APPLICATIONS

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November 14, 2002

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please enter this Preliminary Amendment:

IN THE CLAIMS:

Please cancel all claims without prejudice and add new claims as follows:

3941. (New) A microwave curable composition suitable for a denture base comprising
- (a) at least one member selected from the group consisting of a mono-, di- and/or tri-functional acrylic polymer and a mono-, di-, and/or tri-functional acrylic monomer; a curing agent; a filler; an initiator; a plasticizer; and optionally additional additives;
 - (b) at least one member selected from the group consisting of an organopolysiloxane and a phosphonitrile fluoroelastomer; a filler; a crosslinking agent; and, optionally additional additives, and
- or

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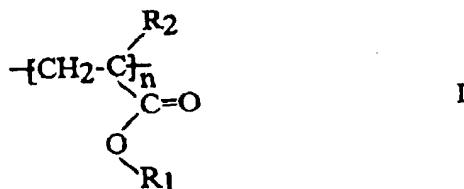
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U.S. Appl. No. 10/074,051 - STANGEL et al.

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cont.
R126
(c) a polymer matrix including a polymerizable resin adapted for use in an oral environment which contains at least one of 2,2-bis[4-(2-hydroxy-3-methacryloxypropoxy)phenyl]propane, ethyleneglycol dimethacrylate; triethyleneglycol dimethacrylate, and/or an urethane dimethacrylate resin; a filler, initiator, a coupling agent and, optionally, additional additives.

40
41. (New) A microwave curable composition suitable for a denture base according to claim 39, wherein said composition comprises (a).

41
42. (New) A microwave curable composition suitable for a denture base according to claim 40, wherein said composition contains at least one acrylic polymer containing repeating monomer units represented by the formula



wherein

R₁ represents a hydrogen atom, an alkyl group, a substituted alkyl group, a benzyl group, a hydroxy alkyl group, a cyclic hydrocarbon, an ether group,

R₂ represents a hydrogen atom, a halogen atom, an alkyl group, or a substituted alkyl group, and

n is an integer of two or more.

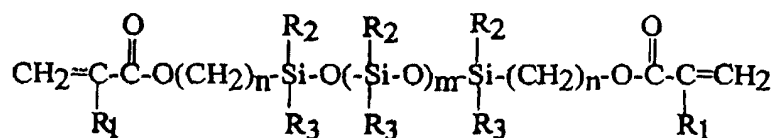
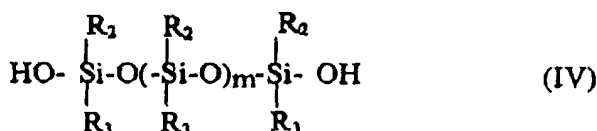
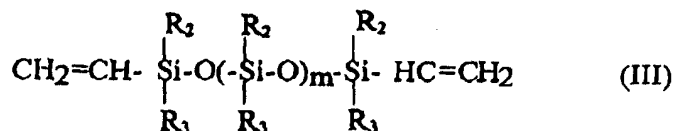
42
43. (New) A microwave curable composition suitable for a denture base according to claim 41, wherein R₁ represents a hydrogen atom, an alkyl group, a cyclic hydrocarbon, a benzyl group, a hydroxy alkyl group, or an ether group.

43
44. (New) A microwave curable composition suitable for a denture base according to claim 41, wherein R₂ represents a hydrogen atom, a halogen atom, or an alkyl group.

44
45. (New) A microwave curable composition suitable for a denture base according to claim 40, wherein said filler comprises an organic filler or an inorganic filler.

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cont. ⁴⁵₄₁. (New) A microwave curable composition suitable for a denture base according to claim 39, wherein, wherein said composition comprises (b).

⁴⁶₄₇. (New) A microwave curable composition suitable for a denture base according to claim 39, wherein said organopolysiloxane is represented by any of formulas (III), (IV) or (V)



wherein said formulas

m represents a value of 1 to about 6,000,

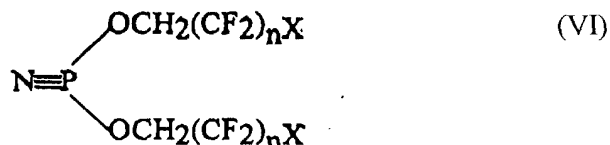
n represents an integer having a value of 1 to 6,

R₁ represents a hydrogen atom or an alkyl group,

R₂ represents an alkyl group of 1-6 carbon atoms, and

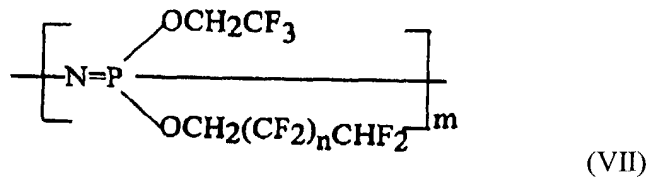
R₃ represents an alkyl group having 1-6 carbon atoms.

R126 ⁴⁷₄₁. (New) A microwave curable composition suitable for a denture base according to claim 39, wherein said composition comprises (b) and said at least one phosphonitrile fluoropolymer that is represented by formula (VI):



U.S. Appln. No. 10/074,051 - STANGEL et al.

in which X represents a hydrogen atom or fluorine atom, n is a value of 1 to 11; or
that has repeating monomer units represented by formula (VII):



in which n represents 3, 5, 7, 9 or 11 and m is from 10,000 to 50,000.

⁴⁸₃₉ 50. (New) A microwave curable composition suitable for a denture base according to claim 51, wherein said composition comprises (c).

⁴⁹₄₈ 51. (New) A microwave curable composition suitable for a denture base according to claim 50, wherein said initiator comprises at least one microwave sensitive compound.

⁵⁰₄₉ 52. (New) A microwave curable composition suitable for a denture base according to claim 51, wherein said initiator comprises at least one member selected from the group consisting of benzoyl peroxide, dilauroyl peroxide, (tert-butyl) peroctoate, tert-butyl perbenzoate, 2,4-dichlorobenzoyl peroxide and 4,4-dichlorobenzoyl peroxide.

⁵¹₄₉ 53. (New) A microwave curable composition suitable for a denture base according to claim 51, wherein said composition contains 0.05% to 1.0% by weight of said initiator.

⁵²₄₈ 54. (New) A microwave curable composition suitable for a denture base according to claim 53, wherein said coupler comprises gamma-methoxypropylene silane or a thiomethacrylate.

⁵³₄₀ 55. (New) A microwave curable composition suitable for a denture base according to claim 54, wherein (a) further comprises an amine accelerator.

⁵⁴₃₉ 56. (New) A microwave curable composition suitable for a denture base according to claim 55, wherein said filler comprises particles having a particle size in the range of 0.04 to approximately 10 micrometers.

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R126
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cont.

⁵⁵
~~57~~. (New) A method for forming a hardened object comprising

- (i) forming a hardenable dental composite from a microwave curable composition, or applying a microwave curable resin matrix to a tooth; and
- (ii) obtaining said hardened object by applying microwave energy to harden said composite or cure said resin matrix.

⁵⁶
~~58~~. (New) A method according to claim ⁵⁵
~~57~~, wherein said composite is a dental prosthetic or orthopedic element.

R126

⁵⁷
~~59~~. (New) A method according to claim ⁵⁵
~~57~~, wherein said composite is a dental prosthetic and in (ii) the hardening is intra-oral using a hand-held microwave applicator.

⁵⁸
~~60~~. (New) A method according to claim ⁵⁵
~~57~~, wherein said dental prosthetic is a composite filling, a crown, a bridge, an inlay, an overlay, a facing, a veneer or orthodontic appliance.

⁵⁹
~~61~~. (New) A method according to claim ⁵⁵
~~57~~, wherein said microwave curable composite are according to claim 20.

⁶⁰
~~62~~. (New) A method according to claim ⁵⁵
~~57~~, wherein in said method a hand-held microwave applicator is used in curing said resin matrix.

See Appendix

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STANGEL et al.

REMARKS

Please enter these claims. They considered supported by the specification for reasons of record in this or the parent application. Claims 41-56 correspond to claims 19-35 in the Second Preliminary Amendment.

Claims 57-62 relate to former claims 36-40.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By: 

Kendrew H. Colton
Registration No. 30,368

FITCH, EVEN, TABIN & FLANNERY
1801 K Street, NW
Suite 401L
Washington, DC 20006-1201
Telephone: (202) 419-7000 7016
Facsimile: (202) 419 -7007

Divisional of 09/391,37
STANGEL et al.

APPENDIX

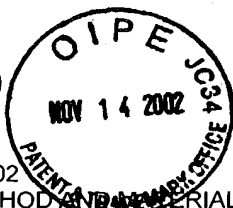
In the claims:

Claims 20-40 canceled without prejudice

New Claims 41 - 62 added.

In re Application of:
Application No.
Filed:
For:

STANGEL et al.
10/074,051
February 14, 2002
A CURING METHOD AND MATERIAL COMPOSITIONS HAVING
DENTAL AND OTHER APPLICATIONS



COMMISSIONER FOR PATENTS
Washington, D.C. 20231

November 14, 2002

Sir:

Transmitted herewith is a Preliminary Amendment in the subject application.

☐ small entity status of this application under 37 CFR 1.27.

DUE DATE: N/A

☐ Petition For Extension Of Time

☐ for a -month extension of time under 37 CFR 1.136, the fee of \$00.00 is enclosed.

☒ petition for an extension of time is **NOT** necessary. However, to the extent that such petition is deemed necessary, for a sufficient extension of time to render the present submission timely. Please charge Deposit Account No. 06-1135 for the appropriate petition fee.

☒ No additional claim fee is required.

☐ Other:

The claim fee has been calculated as shown below:

THIS CLAIM FEE HAS BEEN CALCULATED AS SHOWN BELOW:

					SMALL ENTITY		OTHER THAN A SMALL ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	EXTRA CLAIMS PRESENT	RATE	ADDIT. CLAIM FEE	RATE	ADDIT. CLAIM FEE
TOTAL	22	MINUS	21	1	x 9=	\$	x 18=	\$9.00
INDEPENDENT	3	MINUS	3	0	x 40=	\$	x 84=	\$0.00
<input type="checkbox"/>	FIRST PRESENTATION OF MULTIPLE CLAIM				+ 135=	\$	+ 280=	\$
					TOTAL	\$	TOTAL	\$9.00

☒ Please charge my Deposit Account No. 06-1135 in the amount of \$9.00, under Order No. 7374/72586. A duplicate copy of this sheet is attached.

☐ A check in the amount of \$0.00 is attached.

☒ The Commissioner is hereby authorized to charge any deficiencies in the following fees associated with this communication or credit any overpayment to Deposit Account No. 06-1135. A duplicate copy of this sheet is attached.

☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.

☒ Any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By:

Kendrew H. Colton
Registration No. 30,368

Fitch, Even, Tabin & Flannery
1801 K Street, N.W.
Suite 401L
Washington, D.C. 20006-1201
Telephone No. (202) 419-7000
Facsimile No. (202) 419-7007

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STANGEL et al.

Filed: Herewith

February 14, 2002

Dear Sir:

IN THE CLAIMS:

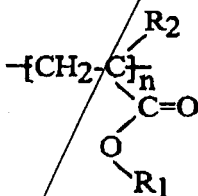
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(c) a polymer matrix including a polymerizable resin adapted for use in an oral environment which contains at least one of 2,2-bis[4-(2-hydroxy-3-methacryloyloxypropoxy)phenyl]propane, ethyleneglycol dimethacrylate; triethyleneglycol

dimethacrylate, and/or an urethane dimethacrylate resin; a filler, initiator, a coupling agent and, optionally, additional additives.

²⁰21. (New) A microwave curable composition suitable for a denture base according to claim ¹⁹20, wherein said composition comprises (a).

²¹22. (New) A microwave curable composition suitable for a denture base according to claim ²⁰21, wherein said composition contains at least one acrylic polymer containing repeating monomer units represented by the formula



I

wherein

R₁ represents a hydrogen atom, an alkyl group, a substituted alkyl group, a benzyl group, a hydroxy alkyl group, a cyclic hydrocarbon, an ether group,

R₂ represents a hydrogen atom, a halogen atom, an alkyl group, or a substituted alkyl group, and

n is an integer of two or more.

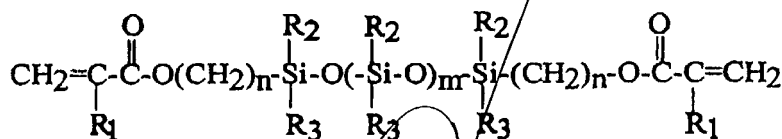
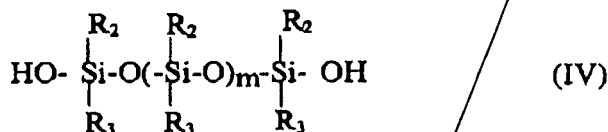
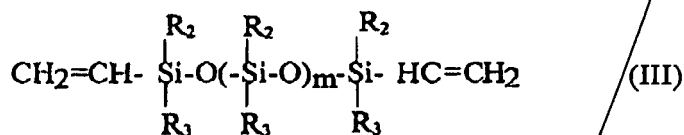
²²23. (New) A microwave curable composition suitable for a denture base according to claim ²¹22, wherein R₁ represents a hydrogen atom, an alkyl group, a cyclic hydrocarbon, a benzyl group, a hydroxy alkyl group, or an ether group.

²³24. (New) A microwave curable composition suitable for a denture base according to claim ²²23, wherein R₂ represents a hydrogen atom, a halogen atom, or an alkyl group.

²⁴25. (New) A microwave curable composition suitable for a denture base according to claim ²⁴24, wherein said filler comprises an organic filler or an inorganic filler.

²⁵26. (New) A microwave curable composition suitable for a denture base according to claim ¹⁹20, wherein said composition comprises (b).

24. (New) A microwave curable composition suitable for a denture base according to claim 25, wherein said organopolysiloxane is represented by any of formulas (III), (IV) or (V)



wherein said formulas

m represents a value of 1 to about 6,000,

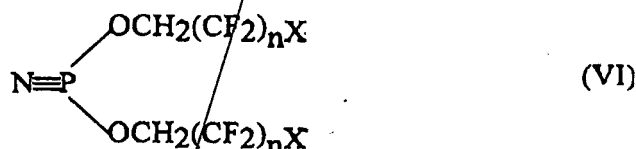
n represents an integer having a value of 1 to 6,

R₁ represents a hydrogen atom or an alkyl group,

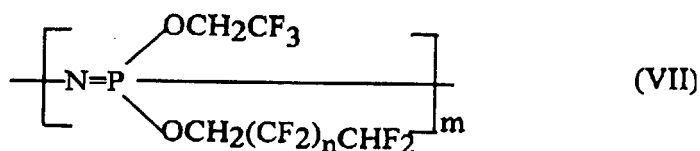
R₂ represents an alkyl group of 1-6 carbon atoms, and

R₃ represents an alkyl group having 1-6 carbon atoms.

28. (New) A microwave curable composition suitable for a denture base according to claim 20, wherein said composition comprises (b) and said at least one phosphonitrile fluoropolymer that is represented by formula (VI):



in which X represents a hydrogen atom or fluorine atom, n is a value of 1 to 11; or that has repeating monomer units represented by formula (VII):



in which n represents 3, 5, 7, 9 or 11 and m is from 10,000 to 50,000.

¹⁸₁₉ 26. (New) A microwave curable composition suitable for a denture base according to claim ¹⁸₁₉ 26, wherein said composition comprises (c).

²⁸₂₉ 30. (New) A microwave curable composition suitable for a denture base according to claim ²⁸₂₉ 30, wherein said initiator comprises at least one microwave sensitive compound.

²⁹₃₀ 31. (New) A microwave curable composition suitable for a denture base according to claim ²⁹₃₀ 31, wherein said initiator comprises at least one member selected from the group consisting of benzoyl peroxide, dilauroyl peroxide, (tert-butyl) peroctoate, tert-butyl perbenzoate, 2,4-dichlorobenzoyl peroxide and 4,4-dichlorobenzoyl peroxide.

³¹₃₂ 32. (New) A microwave curable composition suitable for a denture base according to claim ³¹₃₂ 32, wherein said composition contains 0.05% to 1.0% by weight of said initiator.

³²₃₃ 33. (New) A microwave curable composition suitable for a denture base according to claim ³²₃₃ 33, wherein said coupler comprises gamma-methoxypropylene silane or a thiomethacrylate.

³³₃₄ 34. (New) A microwave curable composition suitable for a denture base according to claim ³³₃₄ 34, wherein (a) further comprises an amine accelerator.

³⁴₃₅ 35. (New) A microwave curable composition suitable for a denture base according to claim ³⁴₃₅ 35, wherein said filler comprises particles having a particle size in the range of 0.04 to approximately 10 micrometers.

³⁵₃₆ 36. (New) A method for forming a hardened object comprising
(i) forming a hardenable composite from a microwave curable composition according to claim ¹⁹₂₀ 20; and
(ii) obtaining said hardened object by using a hand-held microwave applicator to apply microwave energy to harden said composite.

~~36~~³⁷. (New) A method according to claim ~~36~~³⁵, wherein said composite is a dental prosthetic or orthopedic element.

~~34~~³¹ 38. (New) A method according to claim ~~37~~³⁶, wherein said composite is a dental prosthetic and in (ii) the hardening is intra-oral using said hand-held microwave applicator.

38
39. (New) A method according to claim 37, wherein said dental prosthetic is a composite filling, a crown, a bridge, an inlay, an overlay, a facing, a veneer or orthodontic appliance.

See Appendix

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STANGEL et al.

REMARKS

The Second Preliminary Amendment introduces non-elected claim 20 plus new dependent claims 21-35. New claims 36 et seq. are also added. Present claim 20 differs from parent application claim 20 in referring to an acrylic polymer and acrylic monomer, as seen from the original specification at pages 10 and 13.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By: 

Kendrew H. Colton
Registration No. 30,368

FITCH, EVEN, TABIN & FLANNERY
1801 K Street, NW
Suite 401L
Washington, DC 20006-1201
Telephone: (202) 419-7000
Facsimile: (202) 419 -7007

Divisional of 09/391,
STANGEL et al.

APPENDIX

In the claims:

Claims 1-19 canceled without prejudice

New Claims 20-39 added.